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| APPLICATION NO.                               | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.      | CONFIRMATION NO. |
|---|-------------|----------------------|--------------------------|------------------|
| 10/709,485                                    | 05/09/2004  | WEI LU               |                          | 3484             |
| 43447   | 7590        | 08/25/2006           |                          |                  |
| WEI LU<br>1218 BUBB RD<br>CUPERTINO, CA 95014 |             |                      | EXAMINER<br>FOX, BRYAN J |                  |
|   |             |                      | ART UNIT                 | PAPER NUMBER     |

2617

DATE MAILED: 08/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                               |                           |  |
|------------------------------|-------------------------------|---------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/709,485 | Applicant(s)<br>LU ET AL. |  |
|                              | Examiner<br>Bryan J. Fox      | Art Unit<br>2617          |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 15-20 are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election without traverse of Group I in the reply filed on June 2, 2006 is acknowledged.

With regard to the election, the Examiner notes that the Notice of Restriction contained a typographical error listing claim 15 in both groups I and II. Clearly, claim 15 belongs in group II with its dependent claims as it is drawn to a mobile device integrated with other devices. The Examiner will treat the response as electing group I, including claims 1-14.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, it is unclear if the limitations in parenthesis, for example "(air interfaces)" on lines 4-5, are intended to limit the claim. Similarly, the limitations "or sometimes through broadband wireless access systems," on lines 12-13, and "incase of special situations," on page 2, line 9, are indefinite because it is unclear if these are intended to further limit the claim. The use of "etc," on line 16 is also indefinite because it makes the scope of the claim unclear.

Regarding claim 2, it is unclear if the limitations in parenthesis, for example “(including user-defined air interface)” on line 7, are intended to limit the claim. The use of “etc” on lines 18 and 24 renders the claim indefinite.

Regarding claim 3, the use of “etc,” on lines 11 and 15 renders the claim indefinite because it makes the scope of the claim unclear.

Regarding claim 4, it is unclear if the limitations in parenthesis, for example “(operating system)” on line 4, are intended to limit the claim.

Regarding claim 5, the use of “vice verse,” renders the claim indefinite because it is unclear exactly to which limitations it applies.

Regarding claim 6, the use of “etc,” on line 3 renders the claim indefinite because it makes the scope of the claim unclear.

Regarding claim 10, the use of “etc,” on lines 8 and 15 renders the claim indefinite because it makes the scope of the claim unclear.

Regarding claim 11, the use of “etc,” on line 7 renders the claim indefinite because it makes the scope of the claim unclear. It is also unclear if the limitations in parenthesis, for example “(either common standards or user-defined)” on line 4, are intended to limit the claim.

Regarding claim 12, the use of “etc,” on line 15 renders the claim indefinite because it makes the scope of the claim unclear.

Regarding claim 14, the use of “etc,” on lines 6, 9 and 12 renders the claim indefinite because it makes the scope of the claim unclear.

Claims 1-14 are rejected as failing to define the invention in the manner required by 35 U.S.C. 112, second paragraph.

The claim(s) are narrative in form and replete with indefinite and functional or operational language. The structure which goes to make up the device must be clearly and positively specified. The structure must be organized and correlated in such a manner as to present a complete operative device. The claim(s) must be in one sentence form only. Note the format of the claims in the patent(s) cited.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bushnell et al (US007058415B2) in view of Wee et al (US 20030220074A1).

Regarding claim 1, Bushnell et al disclose a dual mode telephone station set with one Directory Number (see column 4, line 59 – column 5, line 55), which reads on the claimed, “wireless communication terminal device supporting various different wireless standards (air interfaces) in the same device with same unique identifier and capable of communicating with other devices, systems or networks through a wireless medium or over-the-air network.” The cordless base station (see column 5, line 57 – column 6, line 24) reads on the claimed, “advanced computer system equipped with networking

facilities to access various different backbone networks through wireless networking interfaces or sometimes through broadband wireless access systems.” The dual mode telephone operates as a cellular telephone or a cordless telephone (see column 4, line 59 – column 5, line 11), which reads on the claimed, “advanced transceiver system supporting various different air interfaces to interconnect said wireless communication terminal device, etc through the air link, said transceiver system connected to said computer system to construct the base-station as a whole.” The cellular communication network with BSC, MSC and HLR connected with wires (see figure 3) reads on the claimed wireless terminal device can also connected to different wireless networks through its networking interfaces in the said wireless terminal device.” Bushnell et al fail to expressly disclose said base-station can connected to other base station or said wireless terminal can also connected to other wireless terminal in an ad-hoc mode.

In a similar field of endeavor, Wee et al disclose a portable wireless system that may be configured to operate as a third party wireless repeater (see paragraph 31).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Bushnell et al with Wee et al to include the above configuration as a wireless repeater in order to increase the utilization of existing wireless network infrastructures by making one or more unused wireless channels available to other devices as suggested by Wee et al (see paragraph 27). The combination reads on the claimed, “said base station can connected to other base station either over the wireline networks or over broadband wireless access system through said computer system, or by over-the-air networks through said transceiver system, said wireless terminal device

can also connected to other wireless terminal device through the air link in an ad-hoc mode in case of special situations.”

Regarding claim 2, Bushnell et al disclose a dual mode handset (see column 4, line 59 – column 5, line 55), which reads on the claimed, “open processing engine to process the signals and protocols of various different air-interfaces (including user-defined air interface) for over-the-air networking and transmission.” The mobile phone communicates wirelessly with a base station (see column 4, line 59 – column 5, line 11), which reads on the claimed, “reconfigurable digital converter to transform the received signals to the digital base-band signals and vice verse, and connected to said open processing engine,” wherein wireless communication necessitates a digital converter. The mobile phone may communicate via a cordless base station or a cellular mode (see column 4, line 59 – column 5, line 55), which reads on the claimed, “programmable radio frequency (RF) module and smart antenna processing module of different frequencies to support different air-interfaces, and connected to said digital converter,” and, “an open wireless BIOS (basic input/output system) structure capable of providing the common and open interfaces to said processing engine, said digital converter, said RF module and said SDM, etc.” Bushnell et al fail to disclose a software definable module (SDM) containing parameters, algorithms and protocols, etc of some wireless air-interfaces to be stored in an external memory card or downloaded from networks.

In a similar field of endeavor, Wee et al disclose a controller 102 that configures portable wireless system 10 to relay wireless signals between a third party electronic appliance and a wireless network that may be implemented in a separate module (e.g. a



PC card, such as a PCMCIA card) that plugs into a legacy portable wireless device (see paragraph 33), which reads on the claimed, "software definable module (SDM) containing parameters, algorithms and protocols, etc of some wireless air-interfaces to be stored in an external memory card or downloaded from networks."

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Bushnell et al with Wee et al to include the above separate module in order to provide backward compatibility.

Regarding claim 3, the combination of Bushnell et al and Wee et al discloses the dual mode telephone station is programmed to operated as a cordless telephone when in proximity of the cordless base station and operates as a cellular telephone when it is out of reach of the cordless base station (see Bushnell et al column 4, lines 59-64), which reads on the claimed, "system software module to support dynamic spectrum management, spectrum sharing and resource management to increase spectrum efficiency and optimize the system performance." When the dual mode telephone station set is in range of the cordless base station, the dual mode handset originated calls are routed through the local wire-line system and when the dual mode telephone station set is not in proximity to the cordless base station, the dual mode telephone station set registers with the cellular service provider (see Bushnell et al column 5, lines 30-55), which reads on the claimed, "convergence layer module to converge wireline and wireless networks and services, as well as transmission convergence, etc." The transition between the cordless base station and the cellular system (see Bushnell et al column 5, lines 30-55) reads on the claimed, "configuration management module to



enable flexible system re-configuration when wireless air-interfaces change, wireline networking changes or system setting change, etc.”

Regarding claim 4, the combination of Bushnell and Wee et al discloses the programming of the dual mode telephone station (see Bushnell et al column 4, lines 59-64) reads on the claimed, “said wireless terminal device capable of system software running upon the system hardware directly while the application software executing on the real-time OS standards through said open wireless BIOS.”

Regarding claim 5, the combination of Bushnell et al and Wee et al discloses the operation of the dual mode telephone station set with the cordless base station and the cellular system (see column 4, line 59 – column 5, line 55), which reads on the claimed, “said open processing engine decodes, de-channelizes and demodulates the base-band channel signals and control signals of said various air-interfaces into detailed digital signaling, traffic and control information, and vice verse.”

Regarding claim 6, Bushnell et al fails to disclose said base station can be reconfigured and re-programmed as wireless router, mobile soft switch or wireless gateway, etc.

In a similar field of endeavor, In a similar field of endeavor, Wee et al disclose a portable wireless system that may be configured to operate as a third party wireless repeater (see paragraph 31), which reads on the claimed, “said base station can be reconfigured and re-programmed as wireless router, mobile soft switch or wireless gateway, etc.”

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Bushnell et al with Wee et al to include the above configuration as a wireless repeater in order to increase the utilization of existing wireless network infrastructures by making one or more unused wireless channels available to other devices as suggested by Wee et al (see paragraph 27).

Regarding claim 7, Bushnell et al fails to disclose said base station can be reconfigured to be portable and/or mobile as well for military applications or special industrial applications.

In a similar field of endeavor, In a similar field of endeavor, Wee et al disclose a portable wireless system that may be configured to operate as a third party wireless repeater (see paragraph 31), which reads on the claimed, "said base station can be reconfigured to be portable and/or mobile as well for military applications or special industrial applications. IN that case the said computer system connects to the backbone networks through said broadband wireless access systems instead of said wireline networking interfaces."

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Bushnell et al with Wee et al to include the above configuration as a wireless repeater in order to increase the utilization of existing wireless network infrastructures by making one or more unused wireless channels available to other devices as suggested by Wee et al (see paragraph 27).

Regarding claim 8, the combination of Bushnell et al and Wee et al discloses the use of CDMA (see Bushnell et al column 3, line 65 – column 4, line 27), which reads on

the claimed, "said wireless terminal device and said base station can communicate each other over said various different air interfaces including...CDMA."

Regarding claim 9, the combination of Bushnell et al and Wee et al discloses the dual mode telephone station is programmed to operated as a cordless telephone when in proximity of the cordless base station and operates as a cellular telephone when it is out of reach of the cordless base station (see Bushnell et al column 4, lines 59-64), which reads on the claimed, "running user-defined detecting technologies."

Regarding claim 10, the combination of Bushnell et al and Wee et al discloses the dual mode telephone station is programmed to operated as a cordless telephone when in proximity of the cordless base station and operates as a cellular telephone when it is out of reach of the cordless base station (see Bushnell et al column 4, lines 59-64), which reads on the claimed, "open operating systems supporting Windows, Linux or user-defined, open resource management covering spectrum, bandwidth, channels, capacity, processors, power, storage and services, etc, open communication application software enabling user-friendly programming and services, common objects library and functional components defining the converged processing elements, open configuration management supporting system reconfiguration in base-band parts, RF parts, antenna parts and network parts, etc."

Regarding claim 11, the combination of Bushnell et al and Wee et al discloses the dual mode telephone station is programmed to operated as a cordless telephone when in proximity of the cordless base station and operates as a cellular telephone when it is out of reach of the cordless base station (see Bushnell et al column 4, lines

59-64), which reads on the claimed, "said open wireless BIOS defining the basic interface structure for the said various different air-interfaces/wireless standards (either common standards or user-defined), said standards switching, said functional modules as well as switching between internal and/or external said modules, etc."

Regarding claim 13, Bushnell et al fail to disclose a software definable module in said wireless terminal device can be stored in or installed from said external memory card (or SIM card), or downloaded from any available networking facilities of said wireless terminal device.

In a similar field of endeavor, Wee et al disclose a controller 102 that configures portable wireless system 10 to relay wireless signals between a third party electronic appliance and a wireless network that may be implemented in a separate module (e.g. a PC card, such as a PCMCIA card) that plugs into a legacy portable wireless device (see paragraph 33), which reads on the claimed, "software definable module in said wireless terminal device can be stored in or installed from said external memory card (or SIM card), or downloaded from any available networking facilities of said wireless terminal device."

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Bushnell et al with Wee et al to include the above separate module in order to provide backward compatibility.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bushnell et al in view of Wee et al as applied to claim 2 above, and further in view of Guo (US 20020187813A1).

Regarding claim 12, the combination of Bushnell et al and Wee et al fails to disclose the use of antenna arrays and beamforming.

In a similar field of endeavor, Guo discloses beamforming antenna arrays (see paragraph 42), which reads on the claimed, "using antenna arrays to process radio signals in space, not only time, to improve performance in presence of wireless fading and interference, using beamforming algorithm to increase received signal-over-noise-rate for desired directions, using diversify algorithm to combat fading in order to work at less SNR, using interference mitigation method to maximally reuse the channel frequencies, using spatial multiplexing algorithms to increase data speeds, for example, MIMO, etc."

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Bushnell et al and Wee et al with Guo to include the above use of beamforming antenna arrays in order to reduce initial deployment costs of a wireless network as suggested by Guo (see paragraph 2).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bushnell et al in view of Wee et al as applied to claim 3 above, and further in view of what was well-known in the art (see MPEP 2144.03)

Regarding claim 14, the combination of Bushnell et al and Wee et al discloses the dual mode telephone station is programmed to operated as a cordless telephone when in proximity of the cordless base station and operates as a cellular telephone when it is out of reach of the cordless base station (see Bushnell et al column 4, lines 59-64), which reads on the claimed, "open service convergence including transparent integrated services across both wireline and wireless networks, etc," and, "open transmission convergence including adaptive modulation, adaptive coding and adaptive equalization, etc." The combination of Bushnell et al and Wee et al fails to disclose the use of IP.

The Examiner takes official notice that IP was well known in the art at the time of the invention.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Bushnell et al and Wee et al to include the above use of IP in order to take advantage of the benefits of IP such as unique global addressing.

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bryan J. Fox whose telephone number is (571) 272-7908. The examiner can normally be reached on Monday through Friday 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on (571) 272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Bryan Fox  
August 21, 2006

  
**CHARLES APPIAH**  
**PRIMARY EXAMINER**